

Persistent increase in the incidence of acute male urethritis diagnosed in general practices in France

Véronique Massari, Yves Dorléans and Antoine Flahault

ABSTRACT

Background

At-risk sexual behaviour seems to have increased in Europe, possibly due to the reassuring efficacy of highly active antiretroviral treatments.

Aim

To follow, from 1990 to 2003, in France, the trends in the incidence of acute male urethritis diagnosed in general practice, a marker of at-risk sexual behaviour.

Design of study

Electronic disease surveillance.

Setting

General practices located all over mainland France.

Method

The GPs of the French Sentinelles network reported, via online computer systems, the acute urethritis cases they diagnosed, and for each case the characteristics of the patients.

Results

After a striking decrease between 1990 and 1995 from 460 per 100 000 men aged 15–64 years (95% confidence interval [CI] = 390 to 520) to 180 (95% CI = 150 to 200), when antiretroviral drugs became available on the French market, the incidence of acute male urethritis stopped decreasing. Between 1996 and 2003, it may have risen again from 190 per 100 000 men (95% CI = 160 to 210) to 325 per 100 000 men (95% CI = 280 to 370) aged 15–64 years. The percentage of homosexual/bisexual men among the cases reported was higher than in the general population (10% versus 4%, $P < 0.001$). Homosexual/bisexual patients were younger than heterosexual patients (34 versus 37 years, $P = 0.04$), more of them had a discharge (88% versus 59%, $P < 0.001$), a history of sexually transmitted disease (65% versus 32%, $P < 0.001$), and at least two sexual partners (74% versus 38%, $P < 0.001$). The most frequent pathogens were *Chlamydia trachomatis* (25%), *Neisseria gonorrhoea* (21%), *Mycoplasma genitalium* (8%), *Ureaplasma urealyticum* (5%), *Trichomonas vaginalis* (3%) and other bacteria (32%). Presence of co-infections was observed in 8.3% of patients.

Conclusions

This increase in the incidence of urethritis, shows that the sexual health of men has worsened in France, and calls for urgent new preventive measures.

Keywords

epidemiology; general practice; male urethritis; sentinel surveillance.

INTRODUCTION

France is one of the European countries most affected by AIDS: in 2002, its incidence rate reached 25.6 per million inhabitants, versus 22.9 per million for the European Union.¹ The source of infection was a heterosexual contact in 58% of the new cases diagnosed in 2003 (half the patients concerned came from sub-Saharan Africa), a male homosexual contact in 29%, and intravenous drug use in 12%.

In France, prevention campaigns against sexually transmitted HIV infection were mainly directed towards the general population rather than 'at-risk' groups. In the early 1990s, these campaigns resulted in a regular decrease in AIDS cases. After 1996, the incidence of AIDS declined sharply, following the introduction of highly active antiretroviral therapies. Furthermore, the widespread use of highly active antiretroviral therapies and of post-exposure treatment since 1997 has changed the perception of AIDS in the general French population and among the most vulnerable groups. It is now perceived as being like any other chronic disease.² Consequently, there are indications, particularly among the homosexual and bisexual community, that the prevention of sexually transmitted disease (STD) is being neglected.³ Thus, several authors have shown that the incidence of STD has increased in Europe and the US, indicating a return to more frequent unprotected sex practices, obviously involving an increased risk of HIV infection.^{2,4-6} Recent data show that after several years of continuing decline, the AIDS incidence in France increased by 3% in 2002 compared to 2001.¹

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In France, male urethritis is mainly diagnosed by GPs.⁷ Using our practitioner-based Sentinelles network data for the years 1985 to 1988, we previously reported a decreasing trend in the urethritis incidence in the general population, whereas the homosexual/bisexual population remained at higher risk.^{8,9} Between 1989 and 1995, the incidence fell markedly but stabilised after 1998.¹⁰ This evolution prompted us to analyse the most recent trend in the incidence of urethritis, and the characteristics of the patients according to sexual preference.

METHOD

The Sentinelles network was created in 1984 as a computerised surveillance system and comprises about 1200 unpaid volunteer GPs, located all over mainland France. A quarter of them participate in the weekly surveillance of 12 health indicators, mostly communicable diseases including acute male urethritis, by reporting the number of cases seen in their practice (even if none were observed) and for each indicator, individual characteristics of the patients.^{11,12} Data reliability is ensured by weekly routine checks for missing or discordant data followed by phone calls to the GPs. A detailed description of the network can be found at www.sentiweb.org.¹³

In France, patients are not registered with their doctors and are free to see any doctor that they choose for any episode of illness. As information about the population covered by an individual GP's practice is therefore not available, we assume that for common diseases, the unknown fraction of the French population under surveillance by the Sentinelles network is representative of the total population consulting in general practice.

To test the representativeness of the Sentinelles network, two comparisons were made. First, the demographic characteristics and activity of GPs were compared with those of French GPs in general, and second, the demographic characteristics of the patients seen by these GPs were compared with those of patients seen by French GPs in general in 2002. GPs were slightly older than French GPs (49.8 versus 47.6 years), had more years of practice (20.2 versus 16.2 years), and were more likely to work in collective practices; in contrast, no difference was noted in the number of home visits per year, number of consultations per year, or the patients' sex ratio and age distribution.

The urethritis case definition is the presence of recent micturitional pain and/or purulent or mucoid discharge. A new case of acute urethritis is a case reported for the first time by the GP. For each case, the practitioner records the patient's age and sexual orientation, and the presence or absence of discharge. Since September 1997, having more than one sexual

How this fits in

In France, male urethritis, a marker of at-risk sexual behaviours is mainly diagnosed in private general practices. Between 1989 and 1995, the incidence of acute urethritis fell markedly but stabilised after 1998 when antiretroviral drugs became available on the French market. This paper analyses the most recent trend in the incidence of urethritis and the characteristics of the patients according to sexual preference. This paper illustrates the value and use of consultation data provided by GPs for the surveillance of sexually transmitted diseases. Our findings highlight continuing concerns about the resurgence of risky sexual behaviours and call for urgent new preventative measures. It provides insight into the general practice management of STDs in France.

partner, a history of STD during the last 12 months and in previous years, a microbiological analysis prescribed and the pathogen identified as reported by the GPs are also recorded. GPs are contacted by phone or email if the age of the patient(s) reported is below 15 years, and/or if more than two cases have been reported during the same week. Cases are reported anonymously, but each GP has his own code of identification, which is noted for each case.

Incidence rates are calculated each week. As some GPs do not connect to the Sentinelles network every week but others connect more than once a week, two corrections of the estimated national incidences are always performed. The first takes account of the number of days of GPs' participation (that is, the time between two successive connections) for each GP. The second is a correction for differences between the regional distribution of GPs who connect during a given week, and the regional distribution of French GPs. According to the district, between 0.4% and 0.8% of French GPs, participated in the Sentinelles network activities during the study period. To obtain national figures, we multiplied the mean number of cases per GP (standardised to GP participation and geographical representativeness) by the total number of GPs in France. In the present study, the annual national figures of urethritis were divided by the total number of men aged between 15 and 64 years given by the national census.

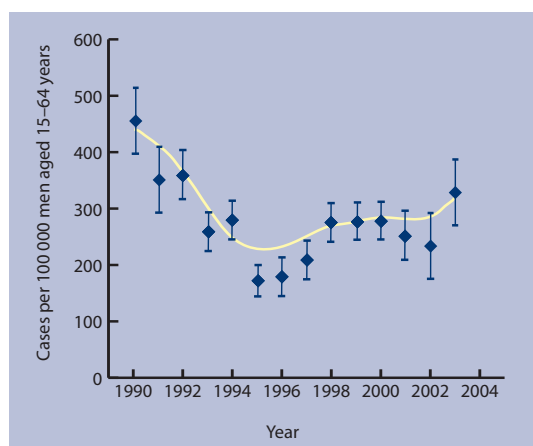
The descriptive analysis was performed using SAS software, version 8.2 (SAS Institute Inc, Cary, NC, 1990). Percentages over time were compared by trend tests.¹⁴ The χ^2 test or Fisher exact test was used to evaluate between group differences in the distribution of categorical variables, and the *t*-test to compare ages. Confidence intervals (CIs) of 95% were calculated around the difference between percentages (d). Statistical significance was defined by $P < 0.01$.

RESULTS

Overall trends

Between 1990 and 1995, the annual incidence rates for adult male urethritis (Figure 1), decreased from 460 per

Figure 1. Annual incidence rates for adult male urethritis in France.



100 000 men aged 15–64 years, (95% CI = 390 to 520) to 180 (95% CI = 150 to 200; $P < 0.01$) and increased since 1996 from 190 per 100 000 men (95% CI = 160 to 210) to 325 in 2003 (95% CI = 280 to 370).

Characteristics of patients with urethritis between 1997 and 2003

The mean age of the 859 cases that were individually documented (that is, 92% of the cases reported) was 36.6 years (standard deviation [SD]: 13.0); of these, 3% were less than 20 years, 30% were 20–29 years, 30% were 30–39 years, 20% were 40–49 years, 10% were 50–59 years and 6% were 60–64 years. The percentage of homosexual men reached 10.1 (95% CI = 7.7 to 12.5%), ranging from 8.6 to 12.3% depending on the year (Table 1). A discharge was observed in 62.8% of cases (95% CI = 59.2 to 66.4%); this percentage increased from 60% in 1997 to 73% in 2003 ($P = 0.099$). A history of STD was reported for 35.5% of patients (95% CI = 31.4 to 39.6%), and 41.4% reported having at least two sexual partners (95% CI = 36.9 to 45.9%). A urethral swab was taken from 66.0% of patients (95% CI = 62.2 to 69.8%), and was more frequent in patients with discharge (69.2 versus 60.3%, $d = 8.9\%$, 95% CI = 1.1 to 16.9, $P = 0.026$).

The results of microbiological identification were available for 78% of the patients for whom an analysis

was prescribed (95% CI = 69 to 86%) and in 23% of cases (95% CI = 18 to 28%) no agent could be identified. From 1997 to 2003, the relative frequencies of aetiological agents were 25% for *Chlamydia trachomatis* (95% CI = 19 to 32%), 21% for *Neisseria gonorrhoea* (95% CI = 15 to 27%), 8% for *Mycoplasma genitalium* (95% CI = 4 to 11%), 5% for *Ureaplasma urealyticum* (95% CI = 2 to 8%), 3% for *Trichomonas vaginalis* (95% CI = 1 to 5%), and 32% other bacteria (95% CI = 25 to 39%). Presence of co-infections was observed in 8.3% of patients (that is, 4.8% of patients were affected with *N. gonorrhoea* and other infective organisms and 3.1% of patients with *C. trachomatis* and other infective organisms).

Differences between homosexual/bisexual and heterosexual patients

Homosexual/bisexual patients were younger than heterosexual patients (33 versus 35 years, $P = 0.02$). The frequency of discharge was higher among homosexual/bisexual than heterosexual men (88.1 versus 59.4%, $d = 28.7\%$, 95% CI = 15.7 to 41.7, $P < 0.001$). Homosexual/bisexual patients were more likely to report a history of STD than heterosexual patients (65.3 versus 32.1%, $d = 33.2\%$, 95% CI = 19.1 to 47.3, $P < 0.001$). The percentage of patients who reported having at least two sexual partners reached 74.4% in homosexual/bisexual men versus 37.8% in heterosexual men ($d = 36.4\%$, 95% CI = 20.9 to 51.9, $P < 0.001$).

A urethral swab was taken from 56.6% of heterosexual patients and from 66.6% of homosexual/bisexual patients ($d = 10.0\%$, 95% CI = -3.5 to 23.5, $P = 0.146$). Homosexual/bisexual men were less likely to have a urethral swab than heterosexual patients when a discharge was reported (53.3 versus 69.6%, $d = 16.3\%$, 95% CI = 1.6 to 31.0, $P = 0.03$). Gonorrhoea was more frequently identified in homosexual/bisexual than heterosexual patients (48.0 versus 12.1%, $d = 35.9\%$, 95% CI = 21.0 to 50.8, $P < 0.001$). However for *C. trachomatis* the corresponding proportions were 12.0% and 19.0% and for the presence of co-infections were 12 and 6%.

Table 1. Characteristics of men aged 15–64 years with urethritis diagnosed by study participants (GPs) by year in France (1997–2003).

Patient's characteristics (%)	1997	1998	1999	2000	2001	2002	2003	Average %	P value
Homosexual/bisexual men	10.2	12.3	9.2	8.6	11.8	10.0	8.8	10.1	0.732
Discharge	60.1	64.4	54.0	68.4	58.9	64.6	72.5	62.8	0.099
At least two sexual partners	37.8	38.9	35.8	50.0	48.0	34.9	45.3	41.3	0.410
History of STD	42.3	37.4	36.0	37.5	41.3	35.8	22.1	35.5	0.041
STD during last 12 months	27.7	32.2	43.7	37.5	48.3	29.2	-	32.8	0.037
Urethral swab	72.6	58.9	60.9	63.7	70.6	71.4	66.3	65.9	0.373
Chlamydia	17.4	21.4	27.9	12.5	22.2	29.6	34.8	25.1	0.061
Gonorrhoea	8.7	25.0	13.9	25.0	30.5	33.3	15.2	21.1	0.283

STD = sexually transmitted disease.

Differences between patients with and without discharge

More patients presenting a discharge than those who did not, had had a urethral swab (69.3 versus 60.3%, $d = 8.1\%$, 95% CI = 0.9 to 17.1, $P = 0.031$); fewer had no identified pathogen (14.7 versus 30.3%, $d = 15.6\%$, 95% CI = 7.2 to 24.0, $P = 0.006$), and more were affected by gonorrhoea (21.3 versus 4.9%, $d = 16.4\%$, 95% CI = 7.7 to 25.1, $P < 0.001$). However, patients with or without discharge were similarly affected by *C. trachomatis* (20 versus 16%).

DISCUSSION

Summary of main findings

This continuous and ongoing French surveillance of male acute urethritis showed a clear cut in the decrease in incidence of the disease after 1996. Homosexual/bisexual men were more often affected by STDs than the general population. They were younger and more of them had a history of STD and at least two sexual partners than heterosexual men. A urethral swab was taken from 66% of the patients. The most frequent pathogens in patients with positive result were *C. trachomatis* (25%), *N. gonorrhoeae* (21%), and other bacteria (32%).

Strengths and limitations of the study

This paper illustrates the value and use of consultation data provided by GPs for the surveillance of sexually transmitted diseases. Our findings highlight continuing concerns about the resurgence of risky sexual behaviour and the consequences for the spread of HIV infection. It provides insight into the general practice management of STDs in France.

The case definition of urethritis remained the same throughout the study period. As this definition is based on clinical criteria, a diagnostic bias seems unlikely to have affected the results reported here.¹⁵

The changes observed could be due to changes in the representativeness of the reporting network over time. GPs may not represent overall French GPs due to their involvement in public health activities; however comparisons of patients in their practice with patients of French GPs in general did not find any difference in terms of sex ratio, age distribution, and many other characteristics of their practice.

This survey did not cover all STD facilities in France, and the observed trends may have been due to changing patterns of attendance or an increased use of healthcare facilities by patients with urethritis and STDs. However, indirect evidence concerning the use of these facilities by STD patients, in the past, does not support this possibility. The results of a study of the sexual behaviour of the French population, conducted in 1991 on a randomised sample of the French population showed that 60% of men over 18 years with

a history of STD during the previous 5 years, had consulted a GP.¹⁶ Moreover this percentage did not differ from the percentages previously published in 1978 by the World Health Organisation (WHO) and by the French National Laboratory network for gonorrhoea isolates in 1995 and 2001.^{7,17,18}

We acknowledge the possibility that the rise in GP consultation rates we observe could be due to more men consulting a GP rather than an STD clinic, and may not be a true rise in incidence. Since no recent epidemiological data or activity reports are available from STD clinics, this possibility cannot be excluded. In 2000 a new law for public health was made to facilitate access to STD clinics. In 1997, 257 STD clinics were opened in the whole country and the diagnosis and treatment of syphilis and gonorrhoea were free. This measure was extended to all STDs in June 2000 and would favour a switch over from GPs to STDs clinics than the opposite.

Our previous study showed a sharp decrease in the incidence of male urethritis between 1989 and 1996,¹⁰ in agreement with other French studies. Data from surveys of STD clinics showed that the number of patients decreased by 50% between 1991 and 1997, and that the percentages of homosexual men among men with acute STD were respectively 15% and 12%.¹⁹

However the recent increase in incidence that we observed cannot be compared with the results of other surveillance systems, as no recent activity reports for these systems are available, particularly from STD clinics. The French laboratory network found that the mean number of positive male gonorrhoea isolates significantly increased between 1998 and 2000.¹⁸ One study on syphilis, showed that its incidence doubled between 2000 and 2002.²⁰

Comparison with existing literature

The slight increase in the incidence of male urethritis observed here is consistent with that reported until 2000 for STD by other STD surveillance systems in France and other European countries.^{4,5,18,21}

In our survey, the percentage of homosexual/bisexual subjects among male urethritis patients was higher than the percentage of homosexual/bisexual men observed in a randomised sample of the French population (10% versus 4%),¹⁶ showing that homosexual/ bisexual men were more often affected by STDs.^{22–24}

The mean age of our patients was 36.6 years, and older than in other European countries. This figure is consistent with the ages observed in other French surveillance systems.^{16,17} Thus data from a randomised sample of the French population showed that the incidence is maximal in the 25–34-year age group for patients with bacterial STDs, and in the 18–24-year age group for patients with viral STDs.¹⁶

Our finding that homosexual/bisexual men seen in general practice were more likely to have had gonorrhoea than heterosexual patients was also observed in another French study, where gonorrhoea was twice as frequent in homosexual than heterosexual men (42% versus 20%, $P < 0.001$).¹⁹ This is important, as gonorrhoea appears to be more closely linked than *C. trachomatis* with behaviour in core groups.^{25,26}

Implications for clinical practice and future research

The results of our survey and of other surveys in France and elsewhere are alarming. Other phenomena observed such as recrudescence of syphilis, and the increasing number of HIV-positive subjects detected in free anonymous HIV/AIDS counselling and testing sites, showed that sexual health has worsened in France and in other European countries.^{20,27,28} Nevertheless, the decreasing trends observed between 1984 and 1995 in our previous study, as well as current surveys, showed that HIV and STD prevention campaigns can induce changes in at-risk sexual behaviour.⁹ Today however, AIDS is less perceived as a deadly disease, and consequently campaigns for the prevention of AIDS and STDs directed toward both homosexual/bisexual and general populations should be urgently readapted to the present decline in preventive behaviour. Several studies have shown a new decline in preventive behaviour among homosexual men in relation to the introduction of highly active antiretroviral therapies, but no such study is available for heterosexual men.²⁹

However, as observed in homosexual men in Amsterdam, several years of increasing STDs without HIV open a debate on a relationship between STD incidence and HIV transmission.³⁰

We are currently conducting a case cross-over study on the Sentinelles network (where 90% of urethritis cases were heterosexual men) in order to study risk-taking and sexual behaviour in these men.

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Ethics committee

All studies conducted within the framework of the Sentinelles network are approved by the French Commission Nationale Informatique et Liberté (471397)

Competing interests

The authors have stated that there are none

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